

ESTIMATION OF CHLOROPHYLL CONTENT IN YOUNG AND ADULT LEAVES OF SOME SELECTED PLANTS IN NON-POLLUTED AREAS

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ABSTRACT

In the present study chlorophyll, a (Chl. a) and b (Chl. b) content of ten different plants have been recorded. The qualitative difference of chlorophyll a (Chl.a) and b (Chl.b) content between young and adult leaves were observed. A total of ten plant species were selected namely Mango (Mangifera indica L.), Hibiscus (Hibiscus rosa-sinensisL.), Neem (Azadirachta indica Juss.), Ashoka (Polyalthia longifolia Sonner. Thw., Enum.), vad (Ficus benghalensis L.) and Nerium (Nerium indicum Mill. Gard) Datura (Datura stramonium L.) Babul (Acacia nilotica (L.) Willd. ex. Del. Ssp. indica (Benth.) Brenan) Bougainvillea (Bougainvillea spectabilis Willd), pimpal (Ficus religiosa L.) were used for analysis of chlorophyll content. In all the cases the adult leaves showed higher chlorophyll content in comparison to young leaves. This has been proved that the age of leaves was an important factor for chlorophyll content.

KEYWORDS: Young and Adult Leaves, Plant Material & Chlorophyll a and b

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INTRODUCTION

Leaf chlorophyll concentration is an important parameter that is regularly measured as an indicator of chloroplast content, photosynthetic mechanism and of plant metabolism. Chlorophyll is antioxidant compound which are present and stored in the chloroplast of green leaf plants and mainly it is present in the green area of leaves, stems, flowers and roots (Mirza et al., 2013; Srichaikul et al., 2011). However the chlorophyll production is mainly depended on the penetration of sunlight and it is the main source of energy for the plant (Srichaikul et al., 2011). In the laboratory, it is commonly determined by using pestle and mortar to extract the pigments using an organic solvent such as acetone or dimethylformamide (Arnon 1949; Porra et al., 1989; Ling et al., 2011). Chlorophyll a and Chlorophyll b is essential pigments of the plant photosystems (Richardson et al., 2002). Moreover, the chlorophyll A is the primary photosynthetic pigment in plants which helps to produce energy in the plant (Srichaikul et al., 2011). However the chlorophyll A concentration is 2-3 times higher than that of secondary chlorophyll b in plants (Srichaikul et al., 2011). To obtain a ratio of chlorophyll a and b, the readings should be taken at the wavelength of 650 nm, which was in between the absorption maxima of both (Arnon 1949; Porra et al., 1989; Devmalkar et al., 2014). Green plants have different characters because of the presence of various pigments like chlorophyll, carotenoid, other pigments and water content which together constitute the spectral characters of a plant body (Philip and Shirley, 1978; Jan-Chang Chen and Chaur-Tzuhn Chen, 2006). However, the chlorophyll content has medicinal qualities. The chlorophyll is also played important role in plant physiology and it can act as nutrition in decline blood sugar conditions, detoxification, digestion, excretion and decreasing allergens

(Srichaikulet *et al.*, 2011, Singh *et al.*, 2011). However in using a modern technique like satellite remote sensing technology being used for analysis of leaf chlorophyll concentration can also be measured. Variation in leaf chlorophyll content can provide information about the physiological condition of a leaf or plant. Destructive methods of leaf chlorophyll content quantification include traditional method using extraction and spectrophotometric or HPLC measurement, but they are considered time-consuming and expensive. Biochemical components (green pigment and nutrient) of forest canopies are among the essential parameters that control physiological processes (Gamon and Quio, 1999; Chen *et al.*, 2006). Present paper records the chlorophyll content of different plant leaves. Difference between chlorophyll content in young and adult leaves of the same plant species was studied. It is essential to do this kind of study to know the photosynthetic activity of physiological changes of young and adult leaves of plants. This work was an experimental study and objective of the study was to analyze chlorophyll a and b content in a young and adult leaf of selected plants. However, the chlorophyll is very important macromolecule which indicates the performance of photosynthesis and energy utilization rate. Also, it gives us energy in the form of food or plant material. Chlorophyll bears antioxidant properties which can be used in a medicinal drug discovery

Principles

chlorophyll is the principle photoreceptor in photosynthesis the light-driven process by which carbon dioxide is fixed to yield carbohydrates and oxygen.

When plants are exposed to environmental pollution above the normal physiologically acceptable range, photosynthesis gets inactivated.

Aim and Objective

Estimation of Chlorophyll Content in Young and Adult Leaves of Some Selected Plants in non-polluted areas.

MATERIALS AND METHODS

Study Area

The Present study was carried out at **Nimbalak and Dongargan Area** which is located in the Nagar Tahasil of Ahmednagar district, Maharashtra during the month of August 2018. A total of ten different plant species were selected at random from different parts of the study area. Sampling was done for once only. Both the young and adult leaves from the same sample plant were collected and subjected to standard chemical procedures for the determination of chlorophyll content.

Requirement

Chemicals- 80% acetone

Equipment's and Glassware- mortar and pestle, spectrophotometer, measuring cylinder, conical flask.

Plant material – ten selected plants young and adult Fresh green leaves from non-polluted

Weight 1 gm. of given plant materials leaves collected and crush them in 80% acetone with the help of mortar and pestle.

- Centrifugal the mixture at 5000 rpm for 5 minutes

- Collect the supernatant in a separate volumetric flask and remaining residue are again crush in 20 ml 80% acetone
- Centrifugal the mixture at 5000 rpm for 5 minutes
- Collect the supernatant in a separate volumetric flask and remaining residue are again crush until the supernatant become 50ml.
- If the supernatant is 25 ml add 25 ml of the 80% acetone to become sample 50ml.
- By using 80% acetone as a blank solution measure the absorbance at 645,652,663 nm.
- Calculate the total amount of chlorophyll and total chlorophyll.
- Repeat this above procedure for polluted leaves. of selected ten plants young and adult leaf.

Formula

$$\text{Chl a} = 11.75 \times A_{662.6} - 2.35 \times A_{645.6}$$

$$\text{Chl b} = 18.61 \times A_{645.6} - 3.96 \times A_{662.6}$$

Where Ca and Cb are the chlorophyll a and chlorophyll b, A is absorbance.

Table 1: Result Nimbalak Area Young Leaves and Adult Leaves

Plant Name	Common Name	Young Leaf Chlorophyll a	Young Leaf Chlorophyll b	Total Chlorophyll =(a+b)	Chlorophyll a Adult Leaf	chlorophyll b Adult Leaf	Total chlorophyll =(a+b)
Azadirachta indica Juss(Averrhaceae)	Neem	5.8985	9.0994	14.9979	8.6856	13.4176	22.1032
Hibiscus rosa-sinensis L.(Malvaceae)	Jaswand	2.7941	4.3335	7.1291	6.7941	9.5587	15.7509
Polyalthia longifolia (Sonner.)Thw, Enum(Annonaceae)	Ashoka	2.0985	3.2447	5.2119	1.222	1.8914	15.7509
Ficus benghalensis L.(Moraceae)	Vad	1.5815	2.4496	3.9711	9.1297	14.0399	23.1696
Ficus religiosa L(Moraceae)	Pimple	5.264	8.1266	13.3904	6.4084	9.9040	16.3124
Datura stramonium L.(Solanaceae)	Dhotra	5.0337	7.7766	12.8103	9.5128	14.6949	24.2077
Nerium indicum Mill .Gard(Apocynaceae)	Kaner	4.0373	6.2285	10.2658	9.1836	15.1744	24.988
Mangifera indica L(Ananardiaceae)	Mango	2.6954	4.1684	6.8638	5.066	7.8261	12.8921
Acacia nilotica (L.)Willd .ex.Del.ssp.indica(Benth)Brenan(Mimosaceae)	Babhul	5.3909	8.3166	13.7075	7.7620	11.9779	19.7399
Bouganelia spectabilis Willd(Nyctaginaceae)	Boganveli a	9.8075	15.1744	24.9809	11.6724	18.0556	29.728

Table 2: Result Comparison of Nimbalak Area Young Leaves and Adult Leaves

Plant Name	Common Name	Young Leaf Total Chlorophyll	Adult Leaf Total Chlorophyll
Azadirachta indica Juss(Averrhaceae)	Neem	14.9979	22.1032
Hibiscus rosa-sinensis L.(Malvaceae)	Jaswand	7.1291	15.7509
Polyalthia longifolia (Sonner.)Thw.Enum(Annonaceae)	Ashoka	5.2119	15.7509
Ficus benghalensis L.(Moraceae)	Vad	3.9711	23.1696
Ficus religiosa L.(Moraceae)	Pimple	13.3904	16.3124
Datura stramonium L.(Solanaceae)	Dhotra	12.8103	24.2077
Nerium indicum Mill. Gard(Apocynaceae)	Kaner	10.2658	24.988
Mangifera indica L.(Anacardiaceae)	Mango	6.8638	12.8921
Acacia nilotica (L.)Willd.ex.Del.ssp.indica(Benth)Brenan(Mimosaceae)	Babhul	13.7075	19.7399
Bouganelia spectabilis Willd(Nyctaginaceae)	Boganvelia	24.9809	29.728

Table 3: Result Dongargan Area Young Leaves and Adult Leaves

Plant Name	Common Name	Young Leaf Chlorophyll a	Young Leaf Chlorophyll b	Young Leaf Chlorophyll Total= (a+b)	Chlorophyll a Adult Leaf	Chlorophyll b Adult Leaf	Total Chlorophyll =(a+b)
Azadirachta indica Juss(Averrhaceae)	Neem	4.0584	6.2605	10.3189	10.5820	16.3515	26.9335
Hibiscus rosa-sinensis L.(Malvaceae)	Jaswand	4.7515	7.3323	12.0838	2.4933	3.8421	3.8421
Polyalthia longifolia (Sonner.)Thw.Enum(Annonaceae)	Ashoka	3.882	5.9921	9.8741	5.3415	8.2644	13.6059
Ficus benghalensis L.(Moraceae)	Vad	2.6038	4.0259	6.6297	6.6364	10.2560	16.8924
Ficus religiosa L.(Moraceae)	Pimple	1.316	2.0236	3.3396	8.8407	13.6515	22.4922
Datura stramonium L..	Dhotra	13.3715	20.7045	34.076	9.5692	14.7923	24.3615
Nerium indicum Mill. Gard(Apocynaceae)	Kaner	3.0244	4.6609	7.6858	6.5283	10.0703	16.5986
Mangifera indica L.(Anacardiaceae)	Mango	3.2782	5.0803	8.3585	7.3860	11.4026	18.7886
Acacia nilotica (L.)Willd.ex.Del.ssp.indica(Benth)Brenan(Mimosaceae)	Babhul	6.7092	10.3656	17.0748	17.1338	26.5982	43.732
Bouganelia spectabilis Willd(Nyctaginaceae)	Boganvelia	10.1402	15.6713	25.8115	16.6591	25.8514	42.5205

Table 4: Result Comparison of Dongargan Area Young Leaves and Adult Leaves

Plant Name	Common Name	Young Leaf Total Chlorophyll	Adult Leaf Total Chlorophyll
Azadirachta indica Juss(Averrhaceae)	Neem	10.3189	26.9335
Hibiscus rosa-sinensis L.(Malvaceae)	Jaswand	12.0838	3.8421
PolyalthialongifoliaSonner.)Thw.Enum(Annonaceae)	Ashoka	9.8741	13.6059
Ficus benghalensis L.(Moraceae)	Vad	6.6297	16.8924
Ficus religiosa L.(Moraceae)	Pimple	3.3396	22.4922
Datura stramonium L.(Solanaceae)	Dhotra	34.076	24.3615
Nerium indicum Mill. Gard.(Apocynaceae)	Kaner	7.6858	16.5986
Mangifera indica L.(Anacardiaceae)	Mango	8.3585	18.7886
Acacia nilotica(L.)Willd.ex.Del.ssp.indica(Benth)Brenan (Mimosaceae)	Babhul	17.0748	43.732
Bouganelia spectabilis Willd.(Nyctaginaceae)	Boganvelia	25.8115	42.5205

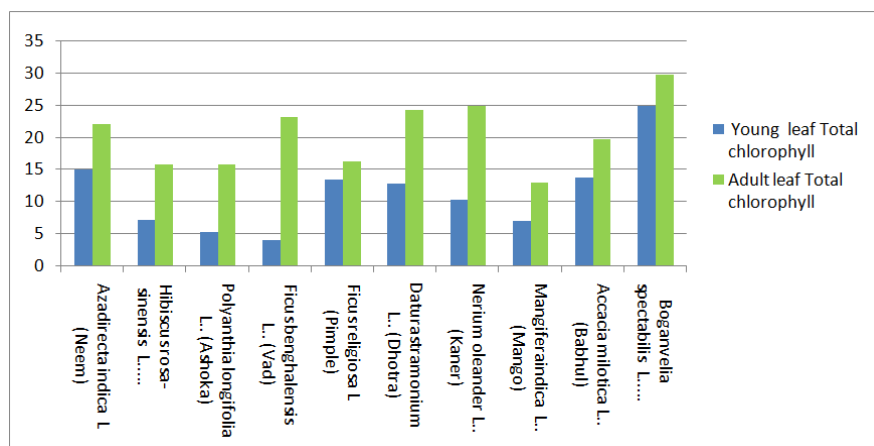


Figure 1

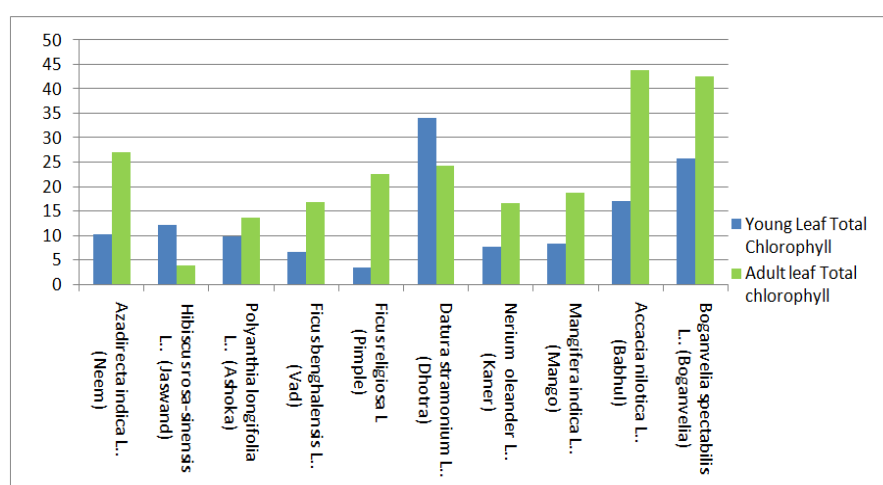


Figure 2

RESULTS

DONGARGOAN Area Chlorophyll A Young

The highest chlorophyll a in young leaves of *Daturastramonium L.* is 13.3715. The chlorophyll a in young leaves of *Bouganveliaspectabilis* Willd. is 10.1402. The chlorophyll a in young leaves of *Acacia nilotica* (L.) Willd. ex. Del. ssp. indica (Benth.) Brenan is 6.7092. The chlorophyll a in young leaves of *Hibiscus rosa-sinensis* L. is 4.7515. The chlorophyll a in young leaves of *Azadirachta indica* Juss is 4.0584. The chlorophyll a in young leaves of *Polyalthia longifolia* (sonner.) Thw., Enum is 3.882. The chlorophyll a in young leaves of *Mangifera indica* L. is 3.2782. The chlorophyll a in young leaves of *Nerium indicum* Mill. Gard is 3.0244. The chlorophyll a in young leaves of *Ficus benghalensis* L. is 2.6038. The chlorophyll a in young leaves of *Ficus religiosa* L. is 1.316

DONGARGOAN AREA Chlorophyll b Young

The highest chlorophyll b in young leaves of *Daturastramonium L.* is 20.7045. The chlorophyll b in young leaves of *Bouganveliaspectabilis* Willd. is 15.6713. The chlorophyll b in young leaves of *Acacia nilotica* (L.) Willd. ex. Del. ssp. indica (Benth.) Brenan is 10.3656. The highest chlorophyll b in young leaves of *Hibiscus rosa-sinensis* L. is 7.3323. The highest chlorophyll b in young leaves of *Azadirachta indica* Juss is 6.2605. The chlorophyll b in young leaves of *Polyalthia longifolia* (sonner.) Thw., Enum is 9.921. The highest chlorophyll b in young leaves of *Mangifera indica* L. is

5.0803 The chlorophyll b in young leaves of *Nerium indicum* Mill. Gard is 4.6609.

The chlorophyll b in young leaves of *Ficus benghalensis* L. is 4.0259 The chlorophyll b in young leaves of *Ficus religiosa* L. is 2.0236.

DONGARGOAN AREA Total Chlorophyll Young

Total chlorophyll in young leaves of *Datura stramonium* L is 34.076. Total chlorophyll in young leaves of *Bougainvillea spectabilis* Willd is 15.6713. Total chlorophyll in young leaves of *Acacia nilotica* (L.) Willd. ex. Del. ssp. indica (Benth) Brenan is 17.0748. Total chlorophyll in young leaves of *Hibiscus rosa-sinensis* L. is 12.0838. Total chlorophyll in young leaves of *Azadirachta indica* Juss is 10.3189. Total chlorophyll in young leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 9.8741. Total chlorophyll in young leaves of *Mangifera indica* L. is 8.3585. Total chlorophyll in young leaves of *Nerium indicum* Mill. Gard is 7.6858. Total chlorophyll in young leaves of *Ficus benghalensis* L. is 6.6297. Total chlorophyll in young leaves of *Ficus religiosa* L is 3.3396.

DONGARGOAN AREA Chlorophyll Adult Leaves a

The highest chlorophyll a in adults leaves of *Acacia nilotica* (L.) Willd. ex. Del. ssp. indica (Benth) Brenan is 17.1338. The chlorophyll a in adults leaves of *Bougainvillea spectabilis* Willd is 16.6591. The chlorophyll a in adults leaves of *Azadirachta indica* Juss is 10.5820. The chlorophyll a in adults leaves of *Datura stramonium* L. is 9.5692.

The chlorophyll a in adults leaves of *Ficus religiosa* L. is 8.8407. The chlorophyll a in adults leaves of *Mangifera indica* L. is 7.3860. The chlorophyll a in adults leaves of *Ficus benghalensis* L. is 6.6364. The chlorophyll a in adults leaves of *Nerium indicum* Mill. Gard. is 6.5283.

The chlorophyll a in adults leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 5.3415.

The highest chlorophyll a in adults leaves of *Hibiscus rosa-sinensis* L. is 2.4933.

DONGARGOAN AREA Chlorophyll Adult Leaves b

The highest chlorophyll b in adults leaves of *Acacia nilotica* (L.) Willd. ex. Del. ssp. indica (Benth) Brenan is 26.5982. The chlorophyll b in adults leaves of *Bougainvillea spectabilis* Willd is 25.8514. The chlorophyll b in adults leaves of *Azadirachta indica* Juss is 16.3515. The chlorophyll b in adults leaves of *Datura stramonium* L. is 14.7923. The chlorophyll b in adults leaves of *Ficus religiosa* L. is 13.6515. The chlorophyll b in adults leaves of *Mangifera indica* L. is 11.4026. The chlorophyll b in adults leaves of *Ficus benghalensis* L. is 10.2560. The chlorophyll b in adults leaves of *Nerium indicum* Mill. Gard is 10.0703.

The chlorophyll b in adults leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 8.2644.

The chlorophyll b in adults leaves of *Hibiscus rosa-sinensis* L. is 3.8421.

DONGARGOAN AREA -Total Chlorophyll Adult Leaves

Total chlorophyll in adult leaves of *Acacia nilotica* (L.) Willd. ex. Del. ssp. indica (Benth) Brenan is 43.732. Total chlorophyll in adult leaves of *Bougainvillea spectabilis* Willd is 42.5205.

Total chlorophyll in adult leaves of *Azadirachta indica* Juss is 26.9335. Total chlorophyll in adult leaves of *Datura stramonium* L. is 24.3615. Total chlorophyll in adult leaves of *Ficus religiosa* L is 22.4922. Total chlorophyll in

adult leaves of *Mangifera indica* L is 18.7886. Total chlorophyll in adult leaves of *Ficus benghalensis* L is 16.8924. Total chlorophyll in adult leaves of *Nerium indicum* Mill. Gard is 16.5986. Total chlorophyll in adult leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 13.6059. Total chlorophyll in adult leaves of *Hibiscus rosa-sinensis* L is 3.8421.

NIMBLACK AREA: Chlorophyll a Young

The highest chlorophyll a in young leaves of *Bougainvillea spectabilis* Willd is 9.8075.

The chlorophyll a in young leaves of *Azadirachta indica* Juss is 5.8985. The chlorophyll a in young leaves of *Acacia nilotica* (L) Willd. ex. Del. ssp. indica (Benth) Brenan is 5.3909. The chlorophyll a in young leaves of *Ficus religiosa* L is 5.264. The chlorophyll a in young leaves of *Datura stramonium* L is 5.0337. The chlorophyll a in young leaves of *Nerium indicum* Mill. Gard is 4.0373. The chlorophyll a in young leaves of *Hibiscus rosa-sinensis* L is 2.7941. The chlorophyll a in young leaves of *Mangifera indica* L is 2.6954. The chlorophyll a in young leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 0.985. The chlorophyll a in young leaves of *Ficus benghalensis* L is 5815.

NIMBLACK AREA Chlorophyll b Young

The highest chlorophyll b in young leaves of *Bougainvillea spectabilis* Willd is 15.1744.

The chlorophyll b in young leaves of *Azadirachta indica* Juss is 9.0994. The chlorophyll b in young leaves of *Acacia nilotica* (L) ex. Del. ssp. indica (Benth) Brenan is 8.3166. The chlorophyll b in young leaves of *Ficus religiosa* L is 8.1266. The chlorophyll b in young leaves of *Datura stramonium* L is 7.7766. The chlorophyll b in young leaves of *Nerium indicum* Mill. Gard is 6.2285. The highest chlorophyll b in young leaves of *Hibiscus rosa-sinensis* L is 4.3335. The chlorophyll b in young leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 3.2447. The chlorophyll b in young leaves of *Ficus benghalensis* L is 2.4496.

NIMBLACK AREA Total Chlorophyll Young

Total chlorophyll in young leaves of *Bougainvillea spectabilis* Willd is 24.9809. Total chlorophyll in young leaves of *Azadirachta indica* Juss is 14.9979. Total chlorophyll in young leaves of *Acacia nilotica* (L) ex. Dell. asp. indica (Benth) Brenan is 13.7075. Total chlorophyll in young leaves of *Ficus religiosa* L is 13.3904. Total chlorophyll in young leaves of *Datura stramonium* L is 12.8103. Total chlorophyll in young leaves of *Nerium indicum* Mill. Gard is 10.2658. Total chlorophyll in young leaves of *Hibiscus rosa-sinensis* L is 7.1291. Total chlorophyll in young leaves of *Mangifera indica* L is 6.8638. Total chlorophyll in young leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 5.2119. Total chlorophyll in young leaves of *Ficus benghalensis* L is 3.9711.

NIMBLACK AREA Chlorophyll a Adults Leaves

The highest chlorophyll a in adult leaves of *Bougainvillea spectabilis* Willd is 11.6724. The chlorophyll a in adult leaves of *Datura stramonium* L is 9.5128. The chlorophyll a in adult leaves of *Nerium indicum* Mill. Gard is 9.1836. The chlorophyll a in adult leaves of *Ficus benghalensis* L is 9.1297. The chlorophyll a in adult leaves of *Azadirachta indica* Juss is 8.6856. The chlorophyll a in adult leaves of *Acacia nilotica* (L) Willd. ex. Del. ssp. indica (Benth) Brenan is 7.7620. The chlorophyll a in adult leaves of *Ficus religiosa* L is 6.4084. The chlorophyll a in adult leaves of *Mangifera indica* L is 5.066. The chlorophyll a in adult leaves of *Polyalthia longifolia* (sonner) Thw., Enum is 1.222.

NIMBLACK AREA Chlorophyll b Adult Leaves

The chlorophyll b in adult leaves of *Nerium indicum* Mill. Gard is 15.1744. The chlorophyll b in adult leaves of *Datura stramonium* L is 14.6949. The chlorophyll b in adult leaves of *Ficus benghalensis* L is 14.0399. The chlorophyll b in adult leaves of *Azadirachta indica* Juss is 13.4176. The chlorophyll b in adult leaves of *Acacia nilotica* (L.) Willd. ex Del. ssp. indica (Benth) Brenan is 11.9779. The chlorophyll b in adult leaves of *Ficus religiosa* L is 9.9040. The chlorophyll b in adult leaves of *Hibiscus rosa-sinensis* L is 9.5587. The chlorophyll b in adult leaves of *Mangifera indica* L is 7.8261. The chlorophyll b in adult leaves of *Polyalthia longifolia* (Sonner) Thw., Enum is 1.8914.

NIMBLACK AREA Total Chlorophyll Adult Leaves

The total chlorophyll in adult leaves of *Bougainvillea spectabilis* Willd is 29.728. The total chlorophyll in adult leaves of *Nerium indicum* Mill. Gard is 24.988. The total chlorophyll in adult leaves of *Datura stramonium* L is 24.207. The total chlorophyll in adult leaves of *Ficus benghalensis* L is 23.1696. The total chlorophyll in adult leaves of *Azadirachta indica* Juss is 22.1032. The total chlorophyll in adult leaves of *Acacia nilotica* (L.) Willd. ex Del. ssp. indica (Benth) Brenan is 19.7399. The total chlorophyll in adult leaves of *Polyalthia longifolia* (Sonner) Thw., Enum is 15.7509. The total chlorophyll in adult leaves of *Hibiscus rosa-sinensis* L is 15.7509. The total chlorophyll in adult leaves of *Ficus religiosa* L is 16.3124. The total chlorophyll in adult leaves of *Mangifera indica* L is 12.8921.

In almost all the selected plants, the chlorophyll content was high in adult leaves in comparison to young leaves. The possible explanation could be that the young leaves were not mature and on the other hand, adult leaves were fully mature (Siwach and Gill, 2014; James *et al.*, 1999). However, the structure of mesophyll plays a very important role in the photosynthetic process of leaves through the functioning of the internal light (Siwach and Gill, 2014; James *et al.*, 1999). Moreover, James *et al.* (1999) have studied and observed that the young leaves had maximum mesophyll content; due to that they appear blue-gray in color while the adult leaves were shown to have a low concentration of mesophyll because of that they appear green in color (Johnson, 1926; Jacobs, 1955; Penfold and Willis, 1956; Pryor, 1976; FAO, 1979; James *et al.*, 1999; Siwach and Gill, 2014). In the context of both young and adult leaves, the chlorophyll a/b ratio was higher in adult leaves than that of young leaves (Smith and Nobel, 1978). However in case of *Hibiscus*, Ashoka, the chlorophyll content was high in young leaves than that of adult leaves.

However, in almost all cases the chlorophyll a concentration was higher than that of chlorophyll b. The possible justification could be that chlorophyll a is the primary pigment while other pigments including chlorophyll b are accessory pigments (Srichaikulet *et al.*, 2011).

CONCLUSIONS

From the findings of the present study, we conclude that most of the plants showed higher chlorophyll content in adult leaves as compared to young leaves.

Some plants had shown low chlorophyll content in adult leaves (-----).

Chlorophyll content can be used as the measurement of the healthiness of plants canopy and the rate of photosynthesis as well. This study will be helpful to do research in chlorophyll content analysis of various plant species and study the vegetation cover area. Also, the effect of pollution on chlorophyll content is an important point of the study. It needs to keep continuous monitoring on chlorophyll content to maintain and to check the healthiness of plants. The

chlorophyll pigments are an indicator of O₂ production and carbon sequestration.

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